INTERSTATE POWER AND LIGHT COMPANY
APPLICATION FOR INCREASE IN ELECTRIC RATES
DOCKET NO. RPU-2019-0001

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INDEX OF EXHIBITS

EXHIBIT DESCRIPTION	EXHIBIT DESIGNATION
U.S. Energy Information Administration: "How many smart meters are installed in the United States, and who has them?" last updated October 26, 2018.	1 (Final)(E/G)
The Edison Foundation: "Electric Company Smart Meter Deployments: Foundation for a Smart Grid", December 2017.	2 (Final)(E/G)
Electric and Gas AMI Financial Analysis dated June 23, 2017.	Confidential 3 (Final)(E/G)
AMI Meter Benefits 2017-2013.	4 (Final)(E/G)
AMI Meter Costs 2017-2013.	5 (Final)(E/G)

U.S. Energy Information Administration

Frequently Asked Questions

How many smart meters are installed in the United States, and who has them?

In 2017, U.S. electric utilities had about 78.9 million advanced (*smart*) metering infrastructure (AMI) installations. About 88% of the AMI installations were residential customer installations.

AMI includes meters that measure and record electricity usage at a minimum of hourly intervals and that provide the data to both the utility and the utility customer at least once a day. AMI installations range from basic hourly interval meters to real-time meters with built-in two-way communication that is capable of recording and transmitting instantaneous data.

The U.S. Energy Information Administration (EIA) does not publish data on natural gas meters or water meters.

Number of AMI installations by sector, 2017

Residential	Commercial	Industrial	Transportation	Total
69,474,626	9,060,128	365,447	1,389	78,901,590

Learn more:
Advanced metering count by technology type
Nearly half of all U.S. electricity customers have smart meters
The number of electric smart meters operating in two-way mode has surpassed the number of one-way smart meters
State policies drive growth in smart meter use
Smart grid legislative and regulatory policies and case studies
Data on Advanced Metering Infrastructure (AMI) installations for individual utilities in EIA-861 database files (file: Advanced meters)
Information on smart meter deployments funded by the Smart Grid Investment Grant program under the American Recovery and Investment Act of 2009

Last Updated: October 26, 2018

Other FAQs about Electricity

Can electric utility customers choose their electricity supplier?
Does EIA have county-level energy production data?
Does EIA have data on costs for electricity transmission and distribution?
Does EIA have data on each power plant in the United States?
Does EIA have energy consumption and price data for cities, counties, or by zip code?
Does EIA have projections for energy production, consumption, and prices for individual states?
Does EIA publish data on peak or hourly electricity generation, demand, and prices?
Does EIA publish electric utility rate, tariff, and demand charge data?
Does EIA publish electricity consumption and price data by state and by utility?
Does EIA publish the location of electric power plants and transmission lines?
How is electricity used in U.S. homes?

The Edison Foundation
INSTITUTE for
ELECTRIC INNOVATION

Report

Electric Company Smart Meter Deployments: Foundation for a Smart Grid

December 2017

Prepared by:
Adam Cooper

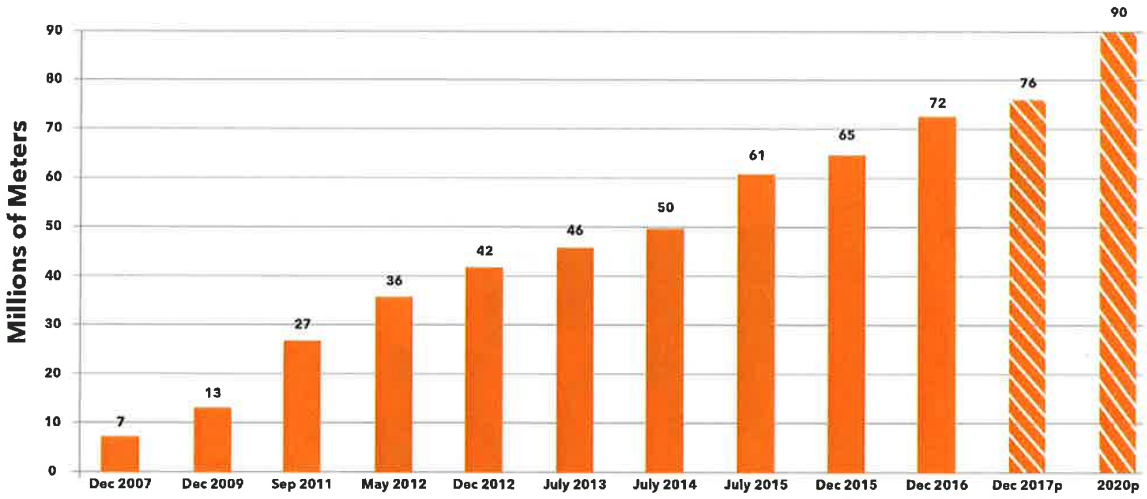
EXECUTIVE SUMMARY

The transition of the electric power system is underway, and a key technology creating big changes for customers and electric companies continues to be smart meters.[1] While deployment of smart meters began a decade ago, electric companies continue to find ways to create value from the data and capabilities smart meters enable. Investing in the distribution grid, particularly in smart meters, is the foundation for a customer-facing, modern energy grid.

In this report, we discuss some of the innovations, benefits, and capabilities enabled by smart meters; summarize the results of the Institute for Electric Innovation's (IEI's) 2017 Smart Meter Survey; and, provide our perspective on the growing importance of investing in the distribution grid.

As shown in Figure 1, smart meter installations have grown dramatically since 2007. As of year-end 2016, electric companies had installed 72 million smart meters, covering more than 55 percent of U.S. households. Based on survey results and approved plans, estimated deployments are expected to reach 76 million smart meters by the end of 2017 (covering 60 percent of U.S. households) and 90 million by 2020.

Figure 1: U.S. Smart Meter Installations Approach 76 Million; Projected to Reach 90 Million by 2020



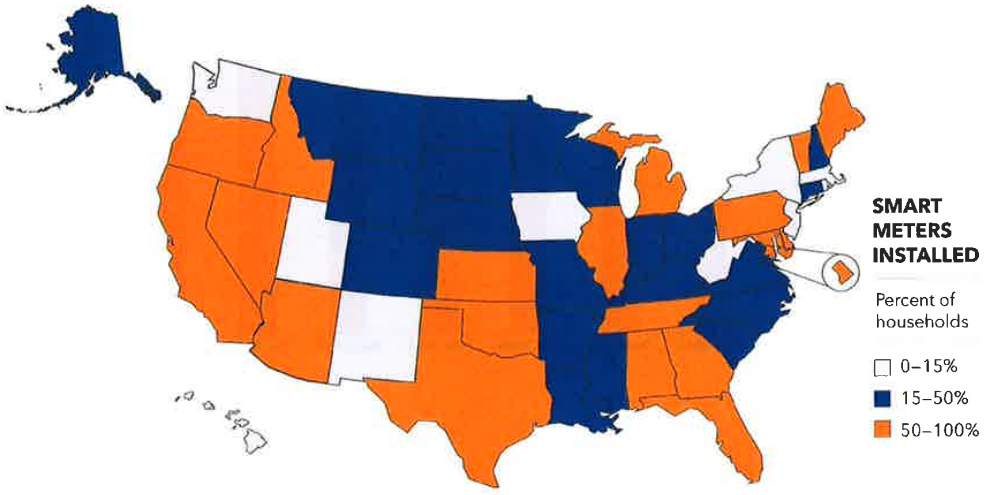
1. Smart Meters, or Advanced Metering Infrastructure (AMI), are digital meters that measure and record electricity usage data hourly, or more frequently, and allow for two-way communication between electric companies and their customers.

HIGHLIGHTS

- Electric companies had installed 72 million smart meters, covering more than 55 percent of U.S. households, as of year-end 2016.
- Deployments are estimated to reach 76 million smart meters by the end of 2017 and 90 million by 2020.
- More than 40 electric companies in the United States have fully deployed smart meters.[2]
- Electric companies are using smart meter data today to enhance grid resiliency and operations, integrate distributed energy resources (DERs), and provide customer solutions.
- Smart meters provide a digital link between electric companies and their customers and open the door to new and expanded services, such as time-based pricing, load control, budget billing, high-usage alerts, push notifications, and web services for energy management.
- Smart meters enable two-way power and information flows to improve visibility into the energy grid.
- Electric companies are focused on modernizing the energy grid and are projected to invest more than $35 billion in the distribution system in 2017.
- A digital energy grid is essential to integrate DERs seamlessly, enhance reliability, reinforce resiliency, and provide more solutions to customers.

Electric companies across the U.S. are leveraging smart meter data to better monitor the health of the energy grid, more quickly restore electric service when outages occur, integrate DERs, and deliver energy solutions to customers. Figure 2 shows smart meter deployments by state.

Figure 2. Smart Meter Deployments by State, 2016 (% of households)



2. An in-depth list of smart meter deployments by electric company is at the end of this report.

INTRODUCTION

This report describes how electric companies are using smart meter data today to enhance grid resiliency and operations, integrate DERs, and provide customer solutions, and discusses the growing importance of the energy distribution grid.

Given the impact of the 2017 hurricane season on the electric power system in some areas of the country, this report provides recent examples of how electric companies used smart meters to enhance grid reliability and operations.

ENHANCING GRID RELIABILITY AND OPERATIONS

Having a reliable supply of electricity is more than just a convenience; it's a necessity. Our economy – and our way of life – depend on it. Smart meters are changing the ways electric companies respond to problems on the energy grid, and the results speak for themselves.

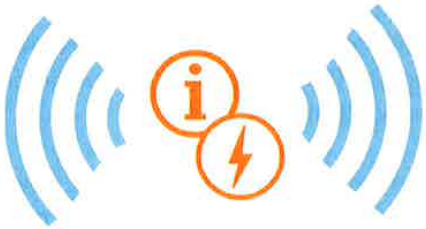
During the historic 2017 hurricane season, smart meters were instrumental in the speedy recovery efforts following Hurricanes Harvey and Irma in August and September. The data from smart meters, when integrated with other systems, gave electric companies "visibility" into the distribution grid and the ability to better coordinate storm response efforts and communication with customers.

CenterPoint Energy has been investing in smarter energy infrastructure since 2009. The company has deployed smart meters to virtually all 2.4 million customers in the Houston area; automated 31 substations, installed 872 Intelligent Grid Switching Devices on more than 200 circuits; and built a private wireless radio telecommunications network across a 5,000-square mile footprint. In 2012, CenterPoint created an asset management analysis and strategy unit, which coordinates business intelligence and data analytics activities across the entire company, enabling the information generated by these technologies to be used more efficiently.

At CenterPoint, smart meters and data analytics provide situational awareness so that crews can be sent to the highest priority outage locations automatically. On circuits that have switching devices or automation, faults are isolated and a large percentage of customers can be restored within minutes.

During Hurricane Harvey, CenterPoint operated more than 250 intelligent grid switching devices covering more than 140,000 customers. The company also flew 15 drones over more than 500 locations to assess damage, efficiently direct crews to accessible locations, and identify equipment needing further inspection. Real-time analytics were used to correlate weather and flood information with outages and to provide operations crews with critical situational awareness and decision-making tools. These steps helped CenterPoint avoid almost 41 million outage minutes during Hurricane Harvey.

Smart meters enable two-way power and information flows to



improve visibility into the health of the energy grid

Florida Power & Light Company (FPL) has invested heavily in energy grid modernization–physical grid hardening, digital grid technologies, and data analytics–to enhance grid resiliency and to improve its understanding of the nature and extent of outages, improving its ability to restore power when outages do occur.

To date, FPL has installed 4.9 million smart meters that let the company know when individual customers are out of power and has deployed more than 83,000 intelligent grid devices and smart switches. As a result, the electric company has deep visibility into its distribution grid. This greatly improves FPL's understanding of the nature and extent of outages when they do occur, improves communications with customers, and improves outage restoration times.

In 2017, Hurricane Irma impacted more than 4.4 million of FPL's nearly 5 million customers. It was the largest outage in FPL's history, and was the first time that a storm impacted all 27,000 square miles of its service territory. System hardening helped to make the system more resilient, and investments in digital grid technologies and data analytics greatly improved FPL's understanding of the nature, extent, and locations of outages, allowing the company to restore hundreds of thousands of customers during the storm without the need to roll trucks. In fact, even before Irma exited FPL's service territory, approximately 1 million customers had been restored. And, for 2 million customers, power was restored by the end of the first full day of restoration work.

Smart meters played a key role in CenterPoint's and FPL's ability to respond rapidly to outages resulting from the two hurricanes.

The sensing capabilities in smart meters continue to advance, and electric companies now are collecting more complete power characteristics (e.g., voltages and reactive power) in addition to consumption and power on/off status from the meters.

By integrating voltage and reactive power data collected by smart meters with Distribution Management Systems (DMS), electric companies are implementing distribution automation and circuit reconfiguration, volt/VAR management, device monitoring, and predictive asset maintenance capabilities. For example, American Electric Power, Baltimore Gas & Electric,

Dominion, DTE Energy, and several other electric companies are using voltage and power quality data collected and transmitted by smart meters for voltage optimization and proactive identification of distribution transformers that are at risk to fail.

And, as the energy grid integrates more distributed energy resources (DERs) and as switching and dynamic automation capabilities proliferate, having an accurate representation and mapping of transformers to customer meters is critical for public safety, faster outage restoration, and the integration of DERs.

The more basic functions of smart meters–such as cross-referencing smart meter data with billing systems to reduce uncollectable expenses, reduce consumption from inactive meters, and better detect energy theft, and reducing the need to "roll trucks" to a customer site to read a meter or troubleshoot–still continue to provide major benefits on a daily basis.

"The data generated by smart meters provides the basic information for integrating distributed energy resources and modeling their behavior."

BEYOND INTEGRATING DISTRIBUTED ENERGY RESOURCES

As DERs, such as private or rooftop solar PV, energy storage systems, electric vehicles, and connected home devices like smart thermostats and smart appliances, continue to grow, electric companies need greater visibility into the performance of these systems to better utilize these resources for efficient distribution grid operations. The data generated by smart meters provides the basic information for integrating these DERs and modeling their behavior.

Going forward, the computing power in each smart meter opens the door to applications beyond traditional metering services.

- For example, applications are under development to predict the behavior of customer-sited energy resources so that these resources can be utilized more efficiently.
- Another example is using smart meters as platforms for distributed analytics, decision making, and communication across devices on the grid edge.

PROVIDING CUSTOMER SOLUTIONS

Smart meters provide a digital link between electric companies and their customers and open the door to new or expanded customer solutions.

Smart Pricing Options

Residential customers have proven time and again that they are engaged, willing to participate in pricing programs, and satisfied when they do participate.

- Smart pricing programs are growing across the United States. Today, millions of customers with smart meters are enrolled in time-based pricing programs that reward participants for reducing energy consumption voluntarily during designated peak times when demand for electricity is expected to be especially high.
- While the majority of customers enrolled in smart pricing programs are responding to time-of-day, or peak pricing signals today, smart meters also support residential rates with demand charges. Demand information can be utilized by customers to better inform their usage decisions.
- Demand response programs are benefitting from the deployment of smart meters and two-way communication, enabling electric companies to communicate with customers to get accurate feedback on demand reductions.
- Smart meters also help customers to leverage smart charging for plug-in electric vehicles to better manage vehicle charging in response to price signals.

Smart meters provide customers control

& flexibility over their energy use

Other Services

Electric companies are providing a range of other services to customers with smart meters, including:

- Power alerts that notify customers if their power is out, provide an estimated time to restore service, and deliver a final notice when the power is back on.
- Remote connect and disconnect services that help customers who are moving receive faster and more convenient electric service.

- Budget setting options that allow customers to set spending goals and that provide weekly updates to show how they are performing against their goals.
- High usage alerts that notify customers if their bill is projected to be higher than normal.
- Fewer estimated bills for a better customer experience.
- Pre-payment and/or pay-as-you-go options.
- Online access to view and download energy use information.
- Decision support tools to assist customers in the evaluation of energy management options, solar or battery energy storage installations, and electric vehicle purchases.

Customers are benefiting from smart meters in many different ways. And, as electric companies continue to engage with customers via online platforms and apps, more customer services and solutions will be powered by smart meter data.

GROWING IMPORTANCE OF DISTRIBUTION GRID

Electric company investments in the distribution grid are projected to be more than $35 billion in 2017. Through targeted investments, electric companies are developing a digital distribution grid that can serve as a platform to enhance grid resiliency and reliability, integrate a growing number of DERs, and provide more customer solutions.

Investing in smart meters is one of the first steps in moving toward a digital distribution grid and recent approvals of smart meter deployments in Indiana, Louisiana, New York, North Carolina, and Ohio demonstrate their continued importance as a critical technology to support the energy grid of the future.

Distribution grid digitization is not a one-off technology project, it is an iterative process. A distribution grid platform requires advanced grid operating systems, robust communications network, and intelligent grid devices. Increasingly, electric company distribution resource plans identify and prioritize grid modernization investments–both software and hardware–that must be made to improve visibility into the distribution system, integrate growing numbers of DERs, and provide a platform for new customer solutions. The role of the distribution grid continues to evolve, but smart meters remain the fundamental building block.

CONCLUSION

Building a solid, smart foundation for a more distributed, increasingly clean, and increasingly digital energy grid allows electric companies to deliver new services to customers. Investing in smart meters is one of the first steps in building a smarter energy infrastructure

As electric companies continue to manage, operate, and invest in an increasingly digital energy grid, the next step is to utilize the data being generated as a strategic asset to improve grid operations, use customer resources more efficiently, and offer new services to customers.

Table 1. Summary of Smart Meter Installations and Projected Deployments

Electric Company Type	Meters Installed (2016)	Estimated Meters Installed (2017)	Projected Meters Installed (2020)
Investor-Owned	53,350,000	57,000,000	70,000,000
Public Power Utilities and Electric Cooperatives	18,650,000	19,000,000	20,000,000
U.S. Total	**72,000,000**	**76,000,000**	**90,000,000**

Note: Totals are rounded.

Table 2. Smart Meter Installations and Projected Deployments by Investor-Owned Electric Company

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
Alliant Energy	IA WI	476,000	961,000	Alliant Energy Corporation is comprised of two subsidiaries, Wisconsin Power and Light (WPL) and Interstate Power and Light (IPL). The WPL smart meter implementation was completed in December of 2011, totaling 476,000 meters. In Fall of 2017, IPL began deployment of 485,000 smart meters in Iowa. Installations are taking place over a three-year period with anticipated commisioning/provisioning of the smart meters by end of 2019.	IEI Smart Meter Survey 2017
Ameren Illinois	IL	425,000	1,249,000	Ameren Illinois installed 425,000 smart meters through end of 2016 and anticipates 700,000 meters installed by end of 2017, and full deployment of 1,249,000 meters by December 2019.	IEI Smart Meter Survey 2017

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
American Electric Power	IN OH OK TX VA	1,910,000	2,965,000	AEP's Indiana Michigan Power subsidiary has deployed 10,600 meters to customers in South Bend, IN; AEP Ohio has deployed 136,000 in the Columbus area and will reach full deployment of over 1 million meters by 2020; AEP Texas reached full deployment of 1,200,000 meters; and AEP's Public Service Company of Oklahoma reached full deployment of 564,000 meters in 2016. Appalachian Power started a smart meter pilot in 2017.	IEI Smart Meter Survey 2017
Arizona Public Service	AZ	1,329,000	1,500,000	APS achieved full deployment of smart meters in May 2014. 2020 projection accounts for new customers in service territory.	IEI Smart Meter Survey 2017
Avista Utilities	WA	13,000	263,000	Avista has installed 13,000 smart meters in Pullman, WA, as part of a Smart Grid Demonstration Grant project. Avista is in the early planning stages of a full rollout of 263,000 meters in Washington.	IEI Smart Meter Survey 2017
Baltimore Gas & Electric	MD	1,244,000	1,270,000	BG&E installed 1,244,000 smart meters through December 2016 and is 98 percent deployed.	IEI Smart Meter Survey 2017
Black Hills Energy	CO MT SD WY	209,000	209,000	Black Hills Energy has fully installed 209,000 smart meters in its service territory across four states.	IEI Smart Meter Survey 2017
CenterPoint Energy	TX	2,388,000	2,388,000	CenterPoint Energy received approval in 2008 to install an advanced metering system across its service territory. It completed deployment in July 2012 and currently has 2,388,000 smart meters installed in the greater Houston area.	IEI Smart Meter Survey 2017; EIA Form 861

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
Central Maine Power	ME	630,600	630,600	Central Maine Power Company completed its smart meter deployment in 2012 and currently has 630,600 smart meters installed.	EIA Form 861
Cleco Power	LA	287,000	287,000	Cleco Power fully deployed smart meters across the company's entire service territory, after receiving approval from the Louisiana Public Service Commission in 2011.	IEI Smart Meter Survey 2017
Commonwealth Edison	IL	3,035,000	4,192,000	In June 2013, ComEd received regulatory approval for full deployment of smart meters. As of December 2016, approximately 3,035,000 smart meters were deployed. ComEd anticipates installations reaching 3,770,000 customers by end of 2017, with full installation complete to 4,192,000 customers in 2019, several years in advance of the originally scheduled 2021 completion date.	IEI Smart Meter Survey 2017
Consolidated Edison	NY	4,100	2,000,000	ConEdison received approval to deploy 3,600,000 smart meters between 2017 and 2022. Installations began on Staten Island in summer 2017, and 2 million meters are projected to be installed by 2020.	Case 15-E-0050, Company Website
Consumers Energy	MI	1,355,000	1,824,000	Consumers Energy deployed 1,355,000 smart meters deployed through end of 2016, with full deployment of 1,824,000 meters anticipated by end of 2017.	IEI Smart Meter Survey 2017
Dominion	VA	367,000	400,000	Dominion has completed installation of 367,000 smart meters in Virginia through 2106. The AMI business case and full deployment plans for 2.7 meters are still under development.	IEI Smart Meter Survey 2017

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
DTE Energy	MI	2,600,000	2,600,000	DTE Energy achieved full deployment of 2,600,000 smart meters in 2016.	IEI Smart Meter Survey 2017
Duke Energy	FL IN KY NC OH SC	1,769,000	7,900,000	Duke has fully deployed 729,000 smart meters in Ohio. In other jurisdictions, through the end of 2016, Duke deployed 79,000 meters in Florida; 69,000 in Kentucky; 624,000 in North Carolina; 232,000 in South Carolina; and 36,000 meters in Indiana. Full deployments are underway in Indiana, North Carolina, and South Carolina. Close to 3 million meters will be installed at the end of 2017, and 7.9 million are projected to be installed by the end of 2020.	IEI Smart Meter Survey 2017; EIA Form 861
Emera Maine	ME	120,600	120,600	Emera Maine has fully deployed 120,600 smart meters in its service territory.	EIA Form 861
Entergy Corporation	AR LA MS TX	20,000	1,918,000	Entergy has deployed 20,000 smart meters in New Orleans and is at the beginning of an enterprise wide deployment of 2,920,000 electric meters by December 2021. The company has regulatory approval in Louisiana; pending regulatory approval in 4 other jurisdictions. Deployment will be spread over 3 years, beginning January 2019 and ending December 2021. A two-year IT systems build out has begun.	IEI Smart Meter Survey 2017

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
FirstEnergy Corporation	OH PA	670,000	2,050,000	Pennsylvania Act 129 (2008) requires electric distribution companies with more than 100,000 customers to install smart meter technology to all customers by 2022. FirstEnergy subsidiary Penn Power is fully deployed with 170,000 meters. At year end 2016, West Penn Power had 98,000 smart meters deployed; MetEd had 138,000; Penelec had 264,000 deployed. Per approved deployment plans, 2,016,000 smart meters will be deployed by 2020. FirstEnergy operating company The Illuminating Company in Cleveland installed 34,300 meters as part of a pilot.	IEI Smart Meter Survey 2017
Florida Power & Light Company	FL	4,942,000	4,942,000	FPL has fully deployed 4,942,000 smart meters to residential, commericial, and industrial customers.	IEI Smart Meter Survey 2017; EIA Form 861
Green Mountain Power	VT	260,600	260,600	Green Mountain Power has deployed 260,600 smart meters to customers across Vermont.	EIA Form 826
Hawaiian Electric Company	HI	5,200	50,000	Hawaiian Electric Installed 5,200 smart meters during the first phase of its smart grid program. In August 2017, the company filed a grid modernization strategy with its state regulatory commission proposing targeted smart meter investments rather than system wide.	Docket No. 2016-0087
Idaho Power	ID OR	525,000	525,000	Idaho Power has fully deployed 525,000 smart meters across its service territory in Idaho and Oregon.	EIA Form 861

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
Indianapolis Power & Light	IN	53,000	80,000	IPL has installed 53,000 smart meters, and will strategically deploy smart meters where needed.	IEI Smart Meter Survey 2017; EIA Form 861
Kansas City Power & Light	KS MO	703,000	703,000	KCP&L completed the installation of 703,000 smart meters; 234,000 in Kansas and 469,000 in Missouri.	EIA Form 861
Madison Gas & Electric	WI	7,300	7,300	MGE installed a small-scale smart grid network, including 7,300 meters, EV charging stations, and in-home energy management systems.	EIA Form 861
Minnesota Power	MN	52,800	83,000	Minnesota Power deployed 52,800 smart meters in northeast Minnesota.	EIA Form 861
National Grid	MA NY	15,000	50,000	15,000 smart meters have been installed in Worcester, MA, for a pilot demonstration. Approximately 13,000 smart meters will be installed to support National Grid's Demand Reduction REV Demonstration in Clifton Park, NY.	IEI Smart Meter Survey 2017; EIA Form 826
NV Energy	NV	1,260,000	1,260,000	NV Energy has fully deployed 1,260,000 smart meters.	EIA Form 861
Oklahoma Gas & Electric	AR OK	873,000	873,000	OG&E has fully installed 873,000 meters: 804,000 in Oklahoma and 69,000 in Arkansas.	EIA Form 861
Oncor	TX	3,424,000	3,424,000	Oncor has fully deployed 3,424,000 smart meters across its service territory.	EIA Form 861
Orange & Rockland	NY	2,500	230,000	Orange & Rockland received approval to install 230,000 smart meters in its New York Service territory. Expected completion date is 2020.	Company Website

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
Pacific Gas & Electric	CA	5,333,000	5,333,000	PG&E has deployed 5,333,000 meters through end of 2016, and completed its SmartMeter Project in 2013. Customers with smart meters can participate in PG&E's SmartRate plan, a voluntary critical peak pricing rate plan that will help manage system load during hot summer days, and receive EnergyAlerts that notify customers when they are moving into higher-priced electricity tiers.	IEI Smart Meter Survey 2017
Pacific Power	OR	0	590,000	Pacific Power plans to install 590,000 smart meters for Oregon customers in 2018-2019.	Press Release
PECO	PA	1,649,000	1,649,000	PECO fully deployed 1,649,000 smart meters.	EIA Form 861
Pepco Holdings	DC DE MD	1,419,000	1,419,000	Pepco has reached full deployment in the District of Columbia with 303,000 smart meters installed; in Maryland, Pepco and Delmarva Power have reached full deployment of 578,000 and 213,000 smart meters, respectively. In Delaware, Delamarva Power has reached full deployment with 325,000 meters installed.	IEI Smart Meter Survey 2017
Portland General Electric	OR	863,000	863,000	PGE's smart meter program was approved by the state regulatory commission in 2008; full deployment was completed by the fall of 2010.	EIA Form 861
PPL	PA	1,426,000	1,426,000	PPL is in compliance with PA Act 129 and has fully deployed 1,426,000 smart meters in its service territory.	EIA Form 861; PA Docket No. M-2009-2092655

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
San Diego Gas & Electric	CA	1,428,000	1,428,000	SDG&E has fully deployed 1,428,000 meters across its service territory.	IEI Smart Meter Survey 2017
Southern California Edison	CA	5,069,000	5,069,000	SCE has fully deployed more than 5 million smart meters and will continue to accommodate population growth. SCE's SmartConnect program uses the meters to offer Critical Peak Pricing and Peak Time Rebate rates to customers with enabling technology.	IEI Smart Meter Survey 2017; EIA Form 861
Southern Company	AL FL GA MS	4,390,000	4,570,000	Southern Company's Georgia Power, Alabama Power, and Gulf Power are fully deployed. Georgia Power reached full deployment in 2012 and has 2,428,000 meters. Alabama Power reached full deployment in 2010 and has 1,503,000 meters. Gulf Power reached full deployment in 2012 and has 453,000 meters. Mississippi Power has installed 6,000 meters and is awaiting approval from the Public Service Commission for full deployment of 187,000.	IEI Smart Meter Survey 2017
Texas New Mexico Power	TX	240,000	240,000	TNMP achieved full deployment of 240,000 meters in Texas in 2016. It is using smart meters to facilitate outage detection/restoration and remote connect/disconnect.	EIA Form 861
United Illuminating	CT	213,000	350,000	United Illuminating has installed 213,000 of its projected 350,000 smart meters.	EIA Form 861

Electric Company	State	Meters Installed (2016)	Projected Meters Installed (2020)	Notes	Resources
Unitil	MA NH	103,000	103,000	Unitil has fully deployed 103,000 smart meters across its service territory around Concord, NH and Fitchburg, MA. It has used this technology to, among other things, implement a time-of-use pricing pilot.	EIA Form 861
Vectren	IN	0	153,000	Vectren is finalizing its AMI network design and systems integration work and starting on its field network equipment deployment. Full deployment of 153,000 smart meters is expected to be complete by summer 2019.	Docket No. 44910
Westar Energy	KS	432,000	705,000	Westar deployed 432,000 smart meters thru end of 2016 with a goal of fully deploying 708,000 smart meters by the end of 2018. As of November 2017, approximately 575,000 meters were deployed.	IEI Smart Meter Survey 2017
WE Energies	WI	187,000	187,000	WE Energies has deployed 187,000 smart meters to customers in Wisconsin.	EIA Form 861
Xcel Energy	CO	23,700	40,000	Xcel Energy has deployed 23,700 smart meters. As part of a May 2017 settlement agreement, Xcel Energy will deploy 13,000 additional meters to support integrated volt-var optimization. Pursuant to the settlement, full deployment of smart meters will not begin until 2020.	EIA Form 826; Proceeding No. 16A-0588E
Other		199,350	857,000	Limited deployments by multiple operating companies accounts for close to 200,000 smart meters deployed through 2016.	IEI Smart Meter Survey 2017; EIA Form 861
U.S. Total		53,350,000	70,000,000		

Note: Totals are rounded.

Table 3. Smart Meter Installations by Electric Company Type and State (2016)

State	Investor-Owned Electric Company Smart Meters Installed	Public Power Utilities and Electric Cooperative Smart Meters Installed	Total
AK	0	95,900	95,900
AL	1,503,000	435,000	1,938,000
AR	69,600	407,800	477,400
AZ	1,329,100	1,171,900	2,501,000
CA	11,830,000	964,000	12,794,000
CO	120,600	402,500	523,100
CT	213,000	25,800	238,800
DC	303,000	0	303,000
DE	325,000	17,000	342,000
FL	5,474,000	786,000	6,260,000
GA	2,428,000	1,807,000	4,235,000
HI	5,200	31,100	36,300
IA	1,000	172,700	173,700
ID	507,600	94,600	602,200
IL	3,460,000	220,800	3,680,800
IN	92,500	547,900	640,400
KS	666,000	294,800	960,800
KY	44,700	676,800	721,500
LA	307,000	158,000	465,000
MA	44,000	64,400	108,400
MD	2,035,000	71,000	2,106,000
ME	751,200	0	751,200
MI	3,955,000	270,200	4,225,200
MN	52,800	397,800	450,600
MO	469,000	483,700	952,700
MS	6,700	536,400	543,100
MT	200	122,700	122,900

State	Investor-Owned Electric Company Smart Meters Installed	Public Power Utilities and Electric Cooperative Smart Meters Installed	Total
NC	552,000	1,083,500	1,635,500
ND	0	117,000	117,000
NE	0	188,300	188,300
NH	74,600	84,700	159,300
NJ	13,500	24,500	38,000
NM	0	102,900	102,900
NV	1,260,000	2,000	1,262,000
NY	12,500	27,800	40,300
OH	885,000	201,000	1,086,000
OK	1,347,000	364,800	1,711,800
OR	880,300	231,900	1,112,200
PA	3,631,000	212,000	3,843,000
RI	250	0	250
SC	214,000	467,900	681,900
SD	68,600	112,100	180,700
TN	0	1,889,500	1,889,500
TX	7,074,000	2,297,600	9,371,600
UT	0	75,200	75,200
VA	367,000	384,000	751,000
VT	262,600	35,000	297,600
WA	18,000	258,000	276,000
WI	653,000	196,400	849,400
WV	1,600	6,400	8,000
WY	42,400	45,100	87,500
U.S. Total	**53,350,000**	**18,650,000**	**72,000,000**

Note: Totals are rounded.

APPENDIX

IEI 2017 Smart Meter Survey: Limits and Interpretation

Thirty electric companies (representing 54 operating companies) provided responses to IEI's 2017 Smart Meter survey. These electric companies account for roughly 41 million of the 72 million smart meters captured in this report. The remaining information on smart meter deployments was obtained from the U.S. Energy Information Administration (Forms 826 & 861), regulatory filings, and company press releases.

This report identifies general trends and examples of how electric companies are using smart meters. The report does not attempt to cover all of the ways in which electric companies are leveraging investments in their smart meters.

Smart Meter Opt-Out Policies

Several states have implemented policies that allow customers to opt out of smart meters. These customers typically pay an initial fee and a monthly opt-out fee. The number of customers who have requested to opt-out of a smart meter installation is extremely low (far less than 1 percent).

For inquiries, please contact Adam Cooper at acooper@edisonfoundation.net

ABOUT THE INSTITUTE FOR ELECTRIC INNOVATION

The Institute for Electric Innovation focuses on advancing the adoption and application of new technologies that will strengthen and transform the energy grid. IEI's members are the investor-owned electric companies that represent about 70 percent of the U.S. electric power industry. The membership is committed to an affordable, reliable, secure, and clean energy future.

IEI promotes the sharing of information, ideas, and experiences among regulators, policy makers, technology companies, thought leaders, and the electric power industry. IEI also identifies policies that support the business case for the adoption of cost-effective technologies.

IEI is governed by a Management Committee of electric industry Chief Executive Officers. In addition, IEI has a Strategy Committee made up of senior electric industry executives and a select group of technology companies on its Technology Partner Roundtable.

ABOUT THE EDISON FOUNDATION

The Edison Foundation is a 501(c)(3) charitable organization dedicated to bringing the benefits of electricity to families, businesses, and industries worldwide. Furthering Thomas Alva Edison's spirit of invention, the Foundation works to encourage a greater understanding of the production, delivery, and use of electric power to foster economic progress; to ensure a safe and clean environment; and to improve the quality of life for all people. The Edison Foundation provides knowledge, insight, and leadership to achieve its goals through research, conferences, grants, and other outreach activities.

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ALLIANT AMI COST AND BENEFIT EVALUATION
AMI BENEFITS 2017-2031

Hard Smart Meter Benefits ($1,000's)	Area of Impact	Benefit Input #	Include?	Apply Growth?	Growth?	Benefit Value ($1,000's, 2016 dollars)	Benefit Unit	Apply Escalation?	%	+/- Sensitivity	Phasing	Total Benefits
O&M Benefits												
Elimination of On-Cycle Meter Reading - Labor, Benefits	Meter Reading	B1	yes	yes	0.3%	$9,665	Annual	yes	3.0%	0%	1	$169,687.7
Reduction in Handheld Service Costs	Meter Reading	B1	yes	no	0.0%	$55	Annual	yes	3.0%	0%	14	$878.1
Automation of Disconnect/Reconnect Process	Meter Operations	B2	yes	yes	0.3%	$3,606	Annual	yes	3.0%	0%	1	$63,316.1
Reduction in Call Volume	Billing and Call Center	B3	yes	yes	0.3%	$3	Annual	yes	3.0%	0%	3	$55.3
Reduction in Re-billing and Exception Handling Volume	Billing and Call Center	B4	yes	yes	0.3%	$299	Annual	yes	3.0%	0%	4	$4,899.7
Avoided "Single Lights Out" Trips	Meter Operations	B6	yes	yes	0.3%	$78	Annual	yes	3.0%	0%	15	$1,281.5
O&M Offset of Implementation Capital Resources	Meter Operations	B8	yes	no	0.0%	$11,900	Total	no	0.0%	0%	16	$11,900.0
Subtotal, O&M Benefits												**$252,018.3**
Capital Benefits												
Elimination of On-Cycle Meter Reading - Fleet Capex	Meter Reading	B1	yes	yes	0.3%	$227	Annual	yes	3.0%	0%	1	$3,982.0
Reduction in Handheld Replacement/Upgrade Costs	Meter Reading	B1	yes	no	0.0%	$541	Periodic	yes	3.0%	0%	2	$749.0
Automation of Disconnect/Reconnect Process - Fleet Capex	Meter Operations	B2	yes	yes	0.3%	$25	Annual	yes	3.0%	0%	1	$442.4
Service worker vehicle benefit	Meter Operations	B2	yes	yes	0.3%	$125	Periodic	yes	3.0%	0%	1	$810.4
Elimination of TOU Meter Installation Trips	Meter Operations	B5	yes	no	0.0%	$54	Annual	yes	3.0%	0%	6	$927.0
Elimination of DG Meter Installation Trips	Meter Operations	B5	yes	no	0.0%	$58	Annual	yes	3.0%	0%	11	$1,327.5
Elimination of Battery Change-out Trips	Meter Operations	B5	yes	no	0.0%	$1	Annual	yes	3.0%	0%	12	$18.5
Elimination of Load Research Reprogramming Trips	Meter Operations	B5	yes	no	0.0%	$0	Annual	yes	3.0%	0%	13	$0.0
Avoided Electric Meter Capital Statistical Testing Program	Meter Operations	B7	yes	yes	0.3%	$1,403	Annual	yes	3.0%	0%	8	$27,360.5
Avoided Electric Meter Capital Periodic Testing Program	Meter Operations	B7	yes	yes	0.3%	$451	Annual	yes	3.0%	0%	9	$8,840.5
Avoided Electric Meter Capital (Growth)	Meter Operations	B7	yes	no	0.0%	$92	Annual	yes	3.0%	0%	10	$1,567.5
Subtotal, Capital Benefits												**$46,025.3**
Interest Cost Reduction Benefits												
Improved Cash Flow from Earlier Collection of Reads	Billing and Call Center	B4	yes	yes	0.3%	$98	Annual	yes	3.0%	0%	5	$1,610.3
Subtotal, Interest Cost Reduction Benefits												**$1,610.3**
Overall Total												**$299,654.0**
Cumulative Total												

Hard Smart Meter Benefits ($1,000's)	2017	2018	2019	2020	2021	2022	2023	2024
O&M Benefits								
Elimination of On-Cycle Meter Reading - Labor, Benefits	$0.0	$1,671.3	$9,430.6	$10,978.3	$11,342.2	$11,717.9	$12,106.1	$12,507.0
Reduction in Handheld Service Costs	$0.0	$0.0	$15.0	$46.4	$63.8	$65.7	$67.6	$69.7
Automation of Disconnect/Reconnect Process	$0.0	$623.6	$3,518.9	$4,096.4	$4,232.1	$4,372.4	$4,517.2	$4,666.8
Reduction in Call Volume	$0.0	$0.0	$0.9	$2.9	$4.0	$4.1	$4.2	$4.4
Reduction in Re-billing and Exception Handling Volume	$0.0	$0.0	$82.1	$254.5	$350.6	$362.2	$374.2	$386.6
Avoided "Single Lights Out" Trips	$0.0	$0.0	$21.5	$66.6	$91.7	$94.7	$97.9	$101.1
O&M Offset of Implementation Capital Resources	$2,997.6	$4,991.9	$3,910.5	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, O&M Benefits	**$2,997.6**	**$7,286.8**	**$16,979.5**	**$15,445.1**	**$16,084.3**	**$16,617.0**	**$17,167.3**	**$17,735.5**
Capital Benefits								
Elimination of On-Cycle Meter Reading - Fleet Capex	$0.0	$39.2	$221.3	$257.6	$266.2	$275.0	$284.1	$293.5
Reduction in Handheld Replacement/Upgrade Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Automation of Disconnect/Reconnect Process - Fleet Capex	$0.0	$4.4	$24.6	$28.6	$29.6	$30.6	$31.6	$32.6
Service worker vehicle benefit	$0.0	$0.0	$122.0	$142.0	$146.7	$0.0	$0.0	$0.0
Elimination of TOU Meter Installation Trips	$0.0	$0.0	$59.4	$61.1	$63.0	$64.9	$66.8	$68.8
Elimination of DG Meter Installation Trips	$0.0	$0.0	$78.7	$68.2	$77.8	$100.2	$72.8	$82.4
Elimination of Battery Change-out Trips	$0.0	$0.0	$1.2	$1.2	$1.3	$1.3	$1.3	$1.4
Elimination of Load Research Reprogramming Trips	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Avoided Electric Meter Capital Statistical Testing Program	$1,300.7	$1,493.2	$1,542.7	$1,593.9	$1,646.7	$1,701.2	$1,757.6	$1,815.8
Avoided Electric Meter Capital Periodic Testing Program	$464.5	$479.9	$495.9	$512.3	$529.3	$546.8	$564.9	$583.6
Avoided Electric Meter Capital (Growth)	$0.0	$0.0	$100.4	$103.4	$106.5	$109.7	$113.0	$116.4
Subtotal, Capital Benefits	**$1,765.3**	**$2,016.7**	**$2,646.1**	**$2,768.4**	**$2,866.9**	**$2,829.6**	**$2,892.0**	**$2,994.5**
Interest Cost Reduction Benefits								
Improved Cash Flow from Earlier Collection of Reads	$0.0	$0.0	$27.0	$83.7	$115.2	$119.1	$123.0	$127.1
Subtotal, Interest Cost Reduction Benefits	**$0.0**	**$0.0**	**$27.0**	**$83.7**	**$115.2**	**$119.1**	**$123.0**	**$127.1**
Overall Total	**$4,762.9**	**$9,303.6**	**$19,652.6**	**$18,297.1**	**$19,066.4**	**$19,565.7**	**$20,182.3**	**$20,857.1**
Cumulative Total	**$4,763**	**$14,066**	**$33,719**	**$52,016**	**$71,083**	**$90,648**	**$110,831**	**$131,688**

ALLIANT AMI COST AND BENEFIT EVALUATION
AMI BENEFITS 2017-2031

Hard Smart Meter Benefits ($1,000's)	2025	2026	2027	2028	2029	2030	2031
O&M Benefits							
Elimination of On-Cycle Meter Reading - Labor, Benefits	$12,921.0	$13,348.6	$13,790.3	$14,246.4	$14,717.5	$15,204.0	$15,706.5
Reduction in Handheld Service Costs	$71.8	$73.9	$76.1	$78.4	$80.8	$83.2	$85.7
Automation of Disconnect/Reconnect Process	$4,821.3	$4,980.8	$5,145.6	$5,315.8	$5,491.6	$5,673.1	$5,860.6
Reduction in Call Volume	$4.5	$4.7	$4.8	$5.0	$5.1	$5.3	$5.5
Reduction in Re-billing and Exception Handling Volume	$399.4	$412.6	$426.3	$440.4	$455.0	$470.0	$485.5
Avoided "Single Lights Out" Trips	$104.5	$107.9	$111.5	$115.2	$119.0	$122.9	$127.0
O&M Offset of Implementation Capital Resources	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, O&M Benefits	**$18,322.4**	**$18,928.6**	**$19,554.6**	**$20,201.2**	**$20,868.9**	**$21,558.6**	**$22,270.8**
Capital Benefits							
Elimination of On-Cycle Meter Reading - Fleet Capex	$303.2	$313.2	$323.6	$334.3	$345.4	$356.8	$368.6
Reduction in Handheld Replacement/Upgrade Costs	$0.0	$0.0	$749.0	$0.0	$0.0	$0.0	$0.0
Automation of Disconnect/Reconnect Process - Fleet Capex	$33.7	$34.8	$36.0	$37.1	$38.4	$39.6	$41.0
Service worker vehicle benefit	$0.0	$0.0	$0.0	$0.0	$0.0	$196.6	$203.1
Elimination of TOU Meter Installation Trips	$70.9	$73.0	$75.2	$77.4	$79.8	$82.2	$84.6
Elimination of DG Meter Installation Trips	$93.3	$89.9	$101.9	$115.4	$130.8	$148.2	$167.9
Elimination of Battery Change-out Trips	$1.4	$1.5	$1.5	$1.5	$1.6	$1.6	$1.7
Elimination of Load Research Reprogramming Trips	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Avoided Electric Meter Capital Statistical Testing Program	$1,875.9	$1,938.0	$2,002.1	$2,068.3	$2,136.7	$2,207.4	$2,280.3
Avoided Electric Meter Capital Periodic Testing Program	$602.9	$622.9	$643.5	$664.8	$686.8	$709.5	$732.9
Avoided Electric Meter Capital (Growth)	$119.8	$123.4	$127.1	$131.0	$134.9	$138.9	$143.1
Subtotal, Capital Benefits	**$3,101.2**	**$3,196.7**	**$4,059.8**	**$3,429.9**	**$3,554.3**	**$3,880.8**	**$4,023.2**
Interest Cost Reduction Benefits							
Improved Cash Flow from Earlier Collection of Reads	$131.3	$135.6	$140.1	$144.7	$149.5	$154.5	$159.6
Subtotal, Interest Cost Reduction Benefits	**$131.3**	**$135.6**	**$140.1**	**$144.7**	**$149.5**	**$154.5**	**$159.6**
Overall Total	**$21,554.9**	**$22,260.9**	**$23,754.6**	**$23,775.9**	**$24,572.7**	**$25,593.9**	**$26,453.6**
Cumulative Total	**$153,242**	**$175,503**	**$199,258**	**$223,034**	**$247,607**	**$273,200**	**$299,654**

	Total Benefits
Summary of Hard Benefits by Type (Nominal Values)	
Subtotal, O&M Benefits	$252,018.3
Subtotal, Capital Benefits	$46,025.3
Subtotal, Interest Cost Reduction Benefits	$1,610.3
Incremental Total	**$299,654.0**
Cumulative Total	
Summary of Hard Benefits by Area of Impact (Nominal Values)	
Subtotal, Meter Reading Benefits	$175,296.7
Subtotal, Meter Operations Benefits	$117,792.0
Subtotal, Billing and Call Center Berefits	$6,565.3
Subtotal, Credit, Collection, Revenue Benefits	$0.0
Incremental Total	**$299,654.0**
Cumulative Total	

ALLIANT AMI COST AND BENEFIT EVALUATION
AMI BENEFITS 2017-2031

	2017	2018	2019	2020	2021	2022	2023	2024
**Summary of Hard Benefits by Type (Nominal **								
Subtotal, O&M Benefits	$2,997.6	$7,286.8	$16,979.5	$15,445.1	$16,084.3	$16,617.0	$17,167.3	$17,735.5
Subtotal, Capital Benefits	$1,765.3	$2,016.7	$2,646.1	$2,768.4	$2,866.9	$2,829.6	$2,892.0	$2,994.5
Subtotal, Interest Cost Reduction Benefits	$0.0	$0.0	$27.0	$83.7	$115.2	$119.1	$123.0	$127.1
Incremental Total	**$4,762.9**	**$9,303.6**	**$19,652.6**	**$18,297.1**	**$19,066.4**	**$19,565.7**	**$20,182.3**	**$20,857.1**
Cumulative Total	**$4,762.9**	**$14,066.4**	**$33,719.0**	**$52,016.1**	**$71,082.5**	**$90,648.3**	**$110,830.5**	**$131,687.6**
Summary of Hard Benefits by Area of Impact (								
Subtotal, Meter Reading Benefits	$0.0	$1,710.5	$9,666.9	$11,282.4	$11,672.1	$12,058.6	$12,457.8	$12,870.1
Subtotal, Meter Operations Benefits	$4,762.9	$7,593.0	$9,875.6	$6,673.7	$6,924.5	$7,021.8	$7,223.0	$7,468.9
Subtotal, Billing and Call Center Benefits	$0.0	$0.0	$110.0	$341.1	$469.8	$485.4	$501.5	$518.1
Subtotal, Credit, Collection, Revenue Benefits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Incremental Total	**$4,762.9**	**$9,303.6**	**$19,652.6**	**$18,297.1**	**$19,066.4**	**$19,565.7**	**$20,182.3**	**$20,857.1**
Cumulative Total	**$4,762.9**	**$14,066.4**	**$33,719.0**	**$52,016.1**	**$71,082.5**	**$90,648.3**	**$110,830.5**	**$131,687.6**

	2025	2026	2027	2028	2029	2030	2031
**Summary of Hard Benefits by Type (Nominal **							
Subtotal, O&M Benefits	$18,322.4	$18,928.6	$19,554.6	$20,201.2	$20,868.9	$21,558.6	$22,270.8
Subtotal, Capital Benefits	$3,101.2	$3,196.7	$4,059.8	$3,429.9	$3,554.3	$3,880.8	$4,023.2
Subtotal, Interest Cost Reduction Benefits	$131.3	$135.6	$140.1	$144.7	$149.5	$154.5	$159.6
Incremental Total	**$21,554.9**	**$22,260.9**	**$23,754.6**	**$23,775.9**	**$24,572.7**	**$25,593.9**	**$26,453.6**
Cumulative Total	**$153,242.5**	**$175,503.4**	**$199,258.0**	**$223,033.8**	**$247,606.5**	**$273,200.4**	**$299,654.0**
Summary of Hard Benefits by Area of Impact (							
Subtotal, Meter Reading Benefits	$13,296.0	$13,735.8	$14,939.0	$14,659.1	$15,143.6	$15,644.0	$16,160.8
Subtotal, Meter Operations Benefits	$7,723.7	$7,972.2	$8,244.4	$8,526.6	$8,819.5	$9,320.1	$9,642.2
Subtotal, Billing and Call Center Benefits	$535.2	$552.9	$571.2	$590.1	$609.6	$629.8	$650.6
Subtotal, Credit, Collection, Revenue Benefits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Incremental Total	**$21,554.9**	**$22,260.9**	**$23,754.6**	**$23,775.9**	**$24,572.7**	**$25,593.9**	**$26,453.6**
Cumulative Total	**$153,242.5**	**$175,503.4**	**$199,258.0**	**$223,033.8**	**$247,606.5**	**$273,200.4**	**$299,654.0**

ALLIANT AMI COST AND BENEFIT EVALUATION
AMI BENEFITS 2017-2031

Soft Smart Meter Benefits ($1,000's)	Area of Impact	Ref #	Include?	Apply Growth?	Growth	Benefit Value ($1,000's, 2016 dollars)	Benefit Unit	Apply Escalation?	%	+/- Sensitivity	Phase In Schedule	Total Benefits
O&M Benefits												
Elimination of On-Cycle Meter Reading	Meter Reading	B1	yes	yes	0.3%	-	Annual	yes	3.0%	0%	1	$0.0
Reduction in Handheld Service Costs	Meter Reading	B1	yes	no	0.0%	-	Annual	yes	3.0%	0%	2	$0.0
Automation of Disconnect/Reconnect Process	Meter Operations	B2	yes	yes	0.3%	-	Annual	yes	3.0%	0%	1	$0.0
Reduction in Call Volume	Billing and Call Center	B3	yes	yes	0.3%	147	Annual	yes	3.0%	0%	3	$2,415.2
Reduction in Re-billing and Exception Handling Volume	Billing and Call Center	B4	yes	yes	0.3%	-	Annual	yes	3.0%	0%	4	$0.0
Avoided "Single Lights Out" Trips	Meter Operations	B6	yes	yes	0.3%	225	Annual	yes	3.0%	0%	15	$3,690.5
O&M Offset of Implementation Capital Resources	Meter Operations	B8	yes	no	0.0%	-	Total	no	0.0%	0%	16	$0.0
Subtotal, O&M Benefits												**$6,105.6**
Capital Benefits												
Elimination of On-Cycle Meter Reading - Fleet Capex	Meter Reading	B1	yes	yes	0.3%	-	Annual	yes	3.0%	0%	1	$0.0
Reduction in Handheld Replacement/Upgrade Costs	Meter Reading	B1	yes	no	0.0%	-	Periodic	yes	3.0%	0%	2	$0.0
Automation of Disconnect/Reconnect Process - Fleet Capex	Meter Operations	B2	yes	yes	0.3%	-	Annual	yes	3.0%	0%	1	$0.0
Elimination of TOU Meter Installation Trips	Meter Operations	B5	yes	no	0.0%	28	Annual	yes	3.0%	0%	6	$480.0
Elimination of DG Meter Installation Trips	Meter Operations	B5	yes	no	0.0%	21	Annual	yes	3.0%	0%	11	$488.0
Elimination of Battery Change-out Trips	Meter Operations	B5	yes	no	0.0%	7	Annual	yes	3.0%	0%	12	$115.6
Elimination of Load Research Reprogramming Trips	Meter Operations	B5	yes	no	0.0%	7	Annual	yes	3.0%	0%	13	$17.3
Avoided Electric Meter Capital Statistical Testing Program	Meter Operations	B7	yes	yes	0.3%	-	Annual	yes	3.0%	0%	8	$0.0
Avoided Electric Meter Capital Periodic Testing Program	Meter Operations	B7	yes	yes	0.3%	-	Annual	yes	3.0%	0%	9	$0.0
Avoided Electric Meter Capital (Growth)	Meter Operations	B7	yes	no	0.0%	-	Annual	yes	3.0%	0%	10	$0.0
Subtotal, Capital Benefits												**$1,100.9**
Interest Cost Reduction Benefits												
Improved Cash Flow from Earlier Collection of Reads	Billing and Call Center	B4	yes	yes	0.3%	-	Annual	yes	3.0%	0%	14	$0.0
Subtotal, Interest Cost Reduction Benefits												**$0.0**
Overall Total												**$7,206.5**
Cumulative Total												

Soft Smart Meter Benefits ($1,000's)	2017	2018	2019	2020	2021	2022	2023	2024
O&M Benefits								
Elimination of On-Cycle Meter Reading	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Reduction in Handheld Service Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Automation of Disconnect/Reconnect Process	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Reduction in Call Volume	$0.0	$0.0	$40.5	$125.5	$172.8	$178.6	$184.5	$190.6
Reduction in Re-billing and Exception Handling Volume	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Avoided "Single Lights Out" Trips	$0.0	$0.0	$61.9	$191.7	$264.1	$272.8	$281.9	$291.2
O&M Offset of Implementation Capital Resources	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, O&M Benefits	**$0.0**	**$0.0**	**$102.3**	**$317.2**	**$436.9**	**$451.4**	**$466.4**	**$481.8**
Capital Benefits								
Elimination of On-Cycle Meter Reading - Fleet Capex	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Reduction in Handheld Replacement/Upgrade Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Automation of Disconnect/Reconnect Process - Fleet Capex	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Elimination of TOU Meter Installation Trips	$0.0	$0.0	$30.7	$31.7	$32.6	$33.6	$34.6	$35.6
Elimination of DG Meter Installation Trips	$0.0	$0.0	$28.9	$25.1	$28.6	$36.9	$26.7	$30.3
Elimination of Battery Change-out Trips	$0.0	$0.0	$7.4	$7.6	$7.9	$8.1	$8.3	$8.6
Elimination of Load Research Reprogramming Trips	$0.0	$0.0	$0.0	$7.7	$0.0	$0.0	$0.0	$0.0
Avoided Electric Meter Capital Statistical Testing Program	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Avoided Electric Meter Capital Periodic Testing Program	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Avoided Electric Meter Capital (Growth)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, Capital Benefits	**$0.0**	**$0.0**	**$67.1**	**$72.1**	**$69.0**	**$78.5**	**$69.7**	**$74.5**
Interest Cost Reduction Benefits								
Improved Cash Flow from Earlier Collection of Reads	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, Interest Cost Reduction Benefits	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**
Overall Total	**$0.0**	**$0.0**	**$169.4**	**$389.3**	**$506.0**	**$529.9**	**$536.0**	**$556.3**
Cumulative Total	**$0.0**	**$0.0**	**$169.4**	**$558.7**	**$1,064.7**	**$1,594.6**	**$2,130.6**	**$2,686.9**

ALLIANT AMI COST AND BENEFIT EVALUATION
AMI BENEFITS 2017-2031

Soft Smart Meter Benefits ($1,000's)	2025	2026	2027	2028	2029	2030	2031
O&M Benefits							
Elimination of On-Cycle Meter Reading	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Reduction in Handheld Service Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Automation of Disconnect/Reconnect Process	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Reduction in Call Volume	$196.9	$203.4	$210.1	$217.1	$224.3	$231.7	$239.3
Reduction in Re-billing and Exception Handling Volume	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Avoided "Single Lights Out" Trips	$300.9	$310.8	$321.1	$331.7	$342.7	$354.0	$365.7
O&M Offset of Implementation Capital Resources	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, O&M Benefits	**$497.7**	**$514.2**	**$531.2**	**$548.8**	**$566.9**	**$585.7**	**$605.0**
Capital Benefits							
Elimination of On-Cycle Meter Reading - Fleet Capex	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Reduction in Handheld Replacement/Upgrade Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Automation of Disconnect/Reconnect Process - Fleet Capex	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Elimination of TOU Meter Installation Trips	$36.7	$37.8	$38.9	$40.1	$41.3	$42.5	$43.8
Elimination of DG Meter Installation Trips	$34.3	$33.1	$37.4	$42.4	$48.1	$54.5	$61.7
Elimination of Battery Change-out Trips	$8.8	$9.1	$9.4	$9.7	$10.0	$10.2	$10.6
Elimination of Load Research Reprogramming Trips	$0.0	$0.0	$9.5	$0.0	$0.0	$0.0	$0.0
Avoided Electric Meter Capital Statistical Testing Program	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Avoided Electric Meter Capital Periodic Testing Program	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Avoided Electric Meter Capital (Growth)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, Capital Benefits	**$79.8**	**$80.0**	**$95.3**	**$92.2**	**$99.3**	**$107.3**	**$116.1**
Interest Cost Reduction Benefits							
Improved Cash Flow from Earlier Collection of Reads	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, Interest Cost Reduction Benefits	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**	**$0.0**
Overall Total	**$577.6**	**$594.2**	**$626.5**	**$641.0**	**$666.3**	**$692.9**	**$721.1**
Cumulative Total	**$3,264.5**	**$3,858.7**	**$4,485.2**	**$5,126.2**	**$5,792.4**	**$6,485.4**	**$7,206.5**

	Total Benefits
Summary of Soft Benefits by Type (Nominal Values)	
Subtotal, O&M Benefits	$6,105.6
Subtotal, Capital Benefits	$1,100.9
Subtotal, Interest Cost Reduction Benefits	$0.0
Incremental Total	**$7,206.5**
Cumulative Total	
Summary of Soft Benefits by Area of Impact (Nominal Values)	
Subtotal, Meter Reading Benefits	$0.0
Subtotal, Meter Operations Benefits	$4,791.4
Subtotal, Billing and Call Center Benefits	$2,415.2
Subtotal, Credit, Collection, Revenue Benefits	$0.0
Incremental Total	**$7,206.5**
Cumulative Total	

ALLIANT AMI COST AND BENEFIT EVALUATION
AMI BENEFITS 2017-2031

	2017	2018	2019	2020	2021	2022	2023	2024
Summary of Soft Benefits by Type (Nominal V								
Subtotal, O&M Benefits	$0.0	$0.0	$102.3	$317.2	$436.9	$451.4	$466.4	$481.8
Subtotal, Capital Benefits	$0.0	$0.0	$67.1	$72.1	$69.0	$78.5	$69.7	$74.5
Subtotal, Interest Cost Reduction Benefits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Incremental Total	**$0.0**	**$0.0**	**$169.4**	**$389.3**	**$506.0**	**$529.9**	**$536.0**	**$556.3**
Cumulative Total	**$0.0**	**$0.0**	**$169.4**	**$558.7**	**$1,064.7**	**$1,594.6**	**$2,130.6**	**$2,686.9**
Summary of Soft Benefits by Area of Impact (I								
Subtotal, Meter Reading Benefits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, Meter Operations Benefits	$0.0	$0.0	$128.9	$263.8	$333.1	$351.4	$351.6	$365.7
Subtotal, Billing and Call Center Benefits	$0.0	$0.0	$40.5	$125.5	$172.8	$178.6	$184.5	$190.6
Subtotal, Credit, Collection, Revenue Benefits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Incremental Total	**$0.0**	**$0.0**	**$169.4**	**$389.3**	**$506.0**	**$529.9**	**$536.0**	**$556.3**
Cumulative Total	**$0.0**	**$0.0**	**$169.4**	**$558.7**	**$1,064.7**	**$1,594.6**	**$2,130.6**	**$2,686.9**

	2025	2026	2027	2028	2029	2030	2031
Summary of Soft Benefits by Type (Nominal V							
Subtotal, O&M Benefits	$497.7	$514.2	$531.2	$548.8	$566.9	$585.7	$605.0
Subtotal, Capital Benefits	$79.8	$80.0	$95.3	$92.2	$99.3	$107.3	$116.1
Subtotal, Interest Cost Reduction Benefits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Incremental Total	**$577.6**	**$594.2**	**$626.5**	**$641.0**	**$666.3**	**$692.9**	**$721.1**
Cumulative Total	**$3,264.5**	**$3,858.7**	**$4,485.2**	**$5,126.2**	**$5,792.4**	**$6,485.4**	**$7,206.5**
Summary of Soft Benefits by Area of Impact (I							
Subtotal, Meter Reading Benefits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, Meter Operations Benefits	$380.7	$390.8	$416.4	$423.9	$442.0	$461.3	$481.8
Subtotal, Billing and Call Center Benefits	$196.9	$203.4	$210.1	$217.1	$224.3	$231.7	$239.3
Subtotal, Credit, Collection, Revenue Benefits	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Incremental Total	**$577.6**	**$594.2**	**$626.5**	**$641.0**	**$666.3**	**$692.9**	**$721.1**
Cumulative Total	**$3,264.5**	**$3,858.7**	**$4,485.2**	**$5,126.2**	**$5,792.4**	**$6,485.4**	**$7,206.5**

ALLIANT AMI COST AND BENEFIT EVALUATION
AMI COSTS 2017-2031

Smart Meter Costs ($1,000's)										15 Yr Sum - Total	15 Yr Sum - Capital	15 Yr Sum - O&M
I. Meters and Installation	Include?	Capex (c) or O&M (o)	Cost Factor	Units	Quantity	Apply Escalation??	Escalation %	Phasing	+/- sens.			
Implementation												
SM Meter Deployment (Core) (incl 1 year warranty)	yes	c	$102	per unit	489,047	no	0.0%	2	0%	$49,672.4	$49,672.4	$0.0
Installation - SM Meter Deployment (Core)	yes	c	$40	per unit	458,858	no	0.0%	2	0%	$18,354.3	$18,354.3	$0.0
SM Gas Module Deployment (Core) (incl 1 year warranty)	yes	c	$55	per unit	228,527	no	0.0%	7	0%	$12,479.8	$12,479.8	$0.0
Installation - SM Gas Module Deployment (Core)	yes	c	$50	per unit	228,527	no	0.0%	7	0%	$11,426.4	$11,426.4	$0.0
Meter Deployment Contractors	yes	c	$1,018,159	Total	1	no	0.0%	14	0%	$1,018.2	$1,018.2	$0.0
CC&B Changes	yes	c	$424,000	Total	1	no	0.0%	22	0%	$424.0	$424.0	$0.0
Hardware/Software RNI Test Lab	yes	c	$235,000	Total	1	no	0.0%	22	0%	$235.0	$235.0	$0.0
Installation equipment (nomads, thumb buddies, adapter plates, etc.)	yes	c	$450,000	Total	1	no	0.0%	22	0%	$450.0	$450.0	$0.0
ABB for CAD	yes	c	$50,000	Total	1	no	0.0%	22	0%	$50.0	$50.0	$0.0
Meter Deployment Expenses	yes	c	$417,600	Total	1	no	0.0%	15	0%	$417.6	$417.6	$0.0
Meter Specialists/Meter Provisioning Team (Loaded) - Meters	yes	c	$7,266,405	Total	1	no	0.0%	42	0%	$7,266.4	$7,266.4	$0.0
Project Management Labor (Loaded) - Meters	yes	c	$1,550,887	Total	1	no	0.0%	43	0%	$1,550.9	$1,550.9	$0.0
Business Unit Labor (Loaded) - Meters	yes	c	$9,641,901	Total	1	no	0.0%	44	0%	$9,641.9	$9,641.9	$0.0
Disposal of Electric Meters	yes	o	$600,000	Total	1	no	0.0%	16	0%	$600.0	$0.0	$600.0
Employee Severance	yes	o	$400,000	Total	1	no	0.0%	25	0%	$400.0	$0.0	$400.0
Ongoing												
SM Meter Deployment (Growth)	yes	c	$102	per unit	22,500	yes	3.0%	3	0%	$2,833.6	$2,833.6	$0.0
SM Meter Deployment (AMI Replacements for Failures Outside Warranty)	yes	c	$102	per unit	31,707	yes	3.0%	5	0%	$4,127.2	$4,127.2	$0.0
Installation - SM Meter Deployment (Growth)	yes	c	$40	per unit	22,500	yes	3.0%	3	0%	$1,115.9	$1,115.9	$0.0
Installation - SM Meter Deployment (AMI Replacements)	yes	c	$40	per unit	31,707	yes	3.0%	4	0%	$1,603.4	$1,603.4	$0.0
SM Gas Module Deployment (Growth)	yes	c	$55	per unit	6,840	yes	3.0%	8	0%	$463.1	$463.1	$0.0
SM Gas Module Deployment (AMI Replacements for Failures Outside Warranty)	yes	c	$55	per unit	14,270	yes	3.0%	10	0%	$1,003.3	$1,003.3	$0.0
Installation - SM Gas Module Deployment (Growth)	yes	c	$50	per unit	6,840	yes	3.0%	8	0%	$424.1	$424.1	$0.0
Installation - SM Gas Module Deployment (AMI Replacements)	yes	c	$50	per unit	14,270	yes	3.0%	9	0%	$906.1	$906.1	$0.0
Ongoing Meter Specialists (Loaded) - Meters	yes	o	$7,492,323	Total	1	no	0.0%	31	0%	$7,492.3	$0.0	$7,492.3
Statistical Testing Program	yes	c	$71	per unit	41,400	yes	3.0%	45	0%	$3,784.6	$3,784.6	$0.0
Periodic Testing Program	yes	c	$70	per unit	67,788	yes	3.0%	46	0%	$6,165.9	$6,165.9	$0.0
Subtotal, Meters and Installation Expenses										**$143,906.3**	**$135,414.0**	**$8,492.3**

Smart Meter Costs ($1,000's)	Implementation Period Total	2017	2018	2019	2020	2021	2022	2023
I. Meters and Installation								
Implementation								
SM Meter Deployment (Core) (incl 1 year warranty)	$49,672.4	$9,934.5	$39,737.9	$0.0	$0.0	$0.0	$0.0	$0.0
Installation - SM Meter Deployment (Core)	$18,354.3	$3,670.9	$14,683.5	$0.0	$0.0	$0.0	$0.0	$0.0
SM Gas Module Deployment (Core) (incl 1 year warranty)	$12,479.8	$0.0	$8,319.8	$4,159.9	$0.0	$0.0	$0.0	$0.0
Installation - SM Gas Module Deployment (Core)	$11,426.4	$0.0	$7,617.6	$3,808.8	$0.0	$0.0	$0.0	$0.0
Meter Deployment Contractors	$1,018.2	$210.0	$432.6	$375.6	$0.0	$0.0	$0.0	$0.0
CC&B Changes	$424.0	$424.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Hardware/Software RNI Test Lab	$235.0	$235.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Installation equipment (nomads, thumb buddies, adapter plates, etc.)	$450.0	$450.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
ABB for CAD	$50.0	$50.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Meter Deployment Expenses	$417.6	$72.0	$201.6	$144.0	$0.0	$0.0	$0.0	$0.0
Meter Specialists/Meter Provisioning Team (Loaded) - Meters	$7,266.4	$1,456.6	$2,538.6	$3,271.2	$0.0	$0.0	$0.0	$0.0
Project Management Labor (Loaded) - Meters	$1,550.9	$243.3	$863.1	$444.5	$0.0	$0.0	$0.0	$0.0
Business Unit Labor (Loaded) - Meters	$9,641.9	$1,954.7	$4,498.1	$3,189.1	$0.0	$0.0	$0.0	$0.0
Disposal of Electric Meters	$600.0	$0.0	$400.0	$200.0	$0.0	$0.0	$0.0	$0.0
Employee Severance	$400.0	$0.0	$180.0	$220.0	$0.0	$0.0	$0.0	$0.0
Ongoing								
SM Meter Deployment (Growth)	$470.9	$152.4	$156.9	$161.6	$166.5	$171.5	$176.6	$181.9
SM Meter Deployment (AMI Replacements for Failures Outside Warranty)	$176.8	$0.0	$8.7	$168.1	$273.4	$282.6	$292.0	$301.4
Installation - SM Meter Deployment (Growth)	$185.5	$60.0	$61.8	$63.7	$65.6	$67.5	$69.6	$71.6
Installation - SM Meter Deployment (AMI Replacements)	$159.4	$3.2	$59.5	$96.8	$100.0	$103.3	$106.7	$110.2
SM Gas Module Deployment (Growth)	$77.0	$24.9	$25.6	$26.4	$27.2	$28.0	$28.9	$29.7
SM Gas Module Deployment (AMI Replacements for Failures Outside Warranty)	$24.2	$0.0	$0.1	$24.1	$63.8	$70.7	$73.0	$75.3
Installation - SM Gas Module Deployment (Growth)	$70.5	$22.8	$23.5	$24.2	$24.9	$25.7	$26.4	$27.2
Installation - SM Gas Module Deployment (AMI Replacements)	$72.2	$0.1	$19.8	$52.4	$58.1	$59.9	$61.9	$63.8
Ongoing Meter Specialists (Loaded) - Meters	$279.9	$0.0	$0.0	$279.9	$423.9	$582.1	$449.7	$617.6
Statistical Testing Program	$0.0	$0.0	$0.0	$0.0	$266.7	$274.7	$282.9	$291.4
Periodic Testing Program	$0.0	$0.0	$0.0	$0.0	$434.5	$447.5	$460.9	$474.7
Subtotal, Meters and Installation Expenses	**$115,503.1**	**$18,964.2**	**$79,828.7**	**$16,710.3**	**$1,904.4**	**$2,113.5**	**$2,028.6**	**$2,245.0**

Smart Meter Costs ($1,000's)	2024	2025	2026	2027	2028	2029	2030	2031
I. Meters and Installation								
Implementation								
SM Meter Deployment (Core) (incl 1 year warranty)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Installation - SM Meter Deployment (Core)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
SM Gas Module Deployment (Core) (incl 1 year warranty)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Installation - SM Gas Module Deployment (Core)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Meter Deployment Contractors	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
CC&B Changes	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Hardware/Software RNI Test Lab	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Installation equipment (nomads, thumb buddies, adapter plates, etc.)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
ABB for CAD	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Meter Deployment Expenses	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Meter Specialists/Meter Provisioning Team (Loaded) - Meters	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Project Management Labor (Loaded) - Meters	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Business Unit Labor (Loaded) - Meters	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Disposal of Electric Meters	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Employee Severance	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Ongoing								
SM Meter Deployment (Growth)	$187.4	$193.0	$198.8	$204.8	$210.9	$217.2	$223.7	$230.4
SM Meter Deployment (AMI Replacements for Failures Outside Warranty)	$311.8	$321.9	$332.4	$343.7	$354.7	$366.7	$378.9	$391.0
Installation - SM Meter Deployment (Growth)	$73.8	$76.0	$78.3	$80.6	$83.1	$85.5	$88.1	$90.8
Installation - SM Meter Deployment (AMI Replacements)	$113.9	$117.7	$121.5	$125.6	$129.7	$134.0	$138.4	$143.0
SM Gas Module Deployment (Growth)	$30.6	$31.5	$32.5	$33.5	$34.5	$35.5	$36.6	$37.7
SM Gas Module Deployment (AMI Replacements for Failures Outside Warranty)	$77.7	$80.2	$82.8	$85.5	$88.2	$91.0	$93.9	$96.9
Installation - SM Gas Module Deployment (Growth)	$28.0	$28.9	$29.7	$30.6	$31.6	$32.5	$33.5	$34.5
Installation - SM Gas Module Deployment (AMI Replacements)	$65.9	$68.0	$70.2	$72.4	$74.7	$77.1	$79.6	$82.2
Ongoing Meter Specialists (Loaded) - Meters	$477.1	$655.2	$674.8	$521.3	$715.9	$553.0	$759.5	$782.3
Statistical Testing Program	$300.1	$309.1	$318.4	$328.0	$337.8	$347.9	$358.4	$369.1
Periodic Testing Program	$489.0	$503.7	$518.8	$534.3	$550.4	$566.9	$583.9	$601.4
Subtotal, Meters and Installation Expenses	**$2,155.3**	**$2,385.2**	**$2,458.2**	**$2,360.3**	**$2,611.4**	**$2,507.5**	**$2,774.5**	**$2,859.3**

Smart Meter Costs ($1,000's)										15 Yr Sum - Total	15 Yr Sum - Capital	15 Yr Sum - O&M
II. Network	Include?	Capex (c) or O&M (o)	Cost Factor	Units	Quantity	Apply Escalation	Escalation %	Phasing	+/- sens.			
Implementation												
AMI Supplier Project Management	yes	c	$5,300,000	Total	1	no	0.0%	1	0%	$5,300.0	$5,300.0	$0.0
AMI Supplier Network Equipment	yes	c	$1,206,000	Total	1	no	0.0%	22	0%	$1,206.0	$1,206.0	$0.0
AMI Supplier Network Equipment - Additional Base Stations	yes	c	$1,350,000	Total	1	no	0.0%	47	0%	$1,350.0	$1,350.0	$0.0
Info Technology Labor (Loaded) - Network	yes	c	$2,584,610	Total	1	no	0.0%	38	0%	$2,584.6	$2,584.6	$0.0
Project Management Labor (Loaded) - Network	yes	c	$460,116	Total	1	no	0.0%	39	0%	$460.1	$460.1	$0.0
RE/ROW Labor (Loaded) - Network	yes	c	$69,101	Total	1	no	0.0%	40	0%	$69.1	$69.1	$0.0
RE/ROW Consultant	yes	c	$232,829	Total	1	no	0.0%	26	0%	$232.8	$232.8	$0.0
Engineering Consultant	yes	c	$3,278,370	Total	1	no	0.0%	27	0%	$3,278.4	$3,278.4	$0.0
Legal	yes	c	$941,600	Total	1	no	0.0%	28	0%	$941.6	$941.6	$0.0
Tower Improvements / Modifications and Site Establishment	yes	c	$17,255,000	Total	1	no	0.0%	29	0%	$17,255.0	$17,255.0	$0.0
Telecom (Backhaul)	yes	c	$3,150,000	Total	1	no	0.0%	47	0%	$3,150.0	$3,150.0	$0.0
Expenses	yes	c	$949,520	Total	1	no	0.0%	30	0%	$949.5	$949.5	$0.0
Ongoing												
Info Technology Labor (Loaded) - Network	yes	o	$45,418	Total	1	no	0.0%	41	0%	$45.4	$0.0	$45.4
Ongoing Lease Costs for 3rd Party Sites	yes	o	$450,000	per yr	1	yes	3.0%	12	0%	$8,054.5	$0.0	$8,054.5
Ongoing Backhaul Costs	yes	o	$600,000	per yr	1	yes	3.0%	13	0%	$10,709.3	$0.0	$10,709.3
Failure cost Take Out Pt (Labor)	yes	o	$3,000	per trip	12	yes	3.0%	11	0%	$46.5	$0.0	$46.5
Subtotal, Smart Meter Communication System										**$55,633**	**$36,777**	**$18,856**

ALLIANT AMI COST AND BENEFIT EVALUATION
AMI COSTS 2017-2031

Smart Meter Costs ($1,000's)	Implementation Period Total	2017	2018	2019	2020	2021	2022	2023
II. Network								
Implementation								
AMI Supplier Project Management	$5,300.0	$2,271.4	$3,028.6	$0.0	$0.0	$0.0	$0.0	$0.0
AMI Supplier Network Equipment	$1,206.0	$1,206.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
AMI Supplier Network Equipment - Additional Base Stations	$1,350.0	$675.0	$675.0	$0.0	$0.0	$0.0	$0.0	$0.0
Info Technology Labor (Loaded) - Network	$2,584.6	$969.9	$1,292.5	$322.3	$0.0	$0.0	$0.0	$0.0
Project Management Labor (Loaded) - Network	$460.1	$140.6	$181.9	$137.7	$0.0	$0.0	$0.0	$0.0
RE/ROW Labor (Loaded) - Network	$69.1	$25.7	$33.3	$10.1	$0.0	$0.0	$0.0	$0.0
RE/ROW Consultant	$232.8	$137.3	$88.8	$6.7	$0.0	$0.0	$0.0	$0.0
Engineering Consultant	$3,278.4	$1,001.5	$1,296.1	$980.8	$0.0	$0.0	$0.0	$0.0
Legal	$941.6	$417.3	$524.3	$0.0	$0.0	$0.0	$0.0	$0.0
Tower Improvements / Modifications and Site Establishment	$17,255.0	$5,470.0	$11,660.0	$125.0	$0.0	$0.0	$0.0	$0.0
Telecom (Backhaul)	$3,150.0	$1,575.0	$1,575.0	$0.0	$0.0	$0.0	$0.0	$0.0
Expenses	$949.5	$259.0	$345.3	$345.3	$0.0	$0.0	$0.0	$0.0
Ongoing	$0.0							
Info Technology Labor (Loaded) - Network	$45.4	$22.2	$11.4	$11.8	$0.0	$0.0	$0.0	$0.0
Ongoing Lease Costs for 3rd Party Sites	$1,075.9	$135.0	$463.5	$477.4	$491.7	$506.5	$521.7	$537.3
Ongoing Backhaul Costs	$1,404.5	$150.0	$618.0	$636.5	$655.6	$675.3	$695.6	$716.4
Failure cost Take Out Pt (Labor)	$0.0	$0.0	$0.0	$0.0	$3.3	$3.4	$3.5	$3.6
Subtotal, Smart Meter Communication System	**$39,303**	**$14,456**	**$21,794**	**$3,053**	**$1,151**	**$1,185**	**$1,221**	**$1,257**

Smart Meter Costs ($1,000's)	2024	2025	2026	2027	2028	2029	2030	2031
II. Network								
Implementation								
AMI Supplier Project Management	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
AMI Supplier Network Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
AMI Supplier Network Equipment - Additional Base Stations	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Info Technology Labor (Loaded) - Network	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Project Management Labor (Loaded) - Network	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
RE/ROW Labor (Loaded) - Network	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
RE/ROW Consultant	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Engineering Consultant	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Legal	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Tower Improvements / Modifications and Site Establishment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Telecom (Backhaul)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Expenses	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Ongoing								
Info Technology Labor (Loaded) - Network	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0
Ongoing Lease Costs for 3rd Party Sites	$553.4	$570.0	$587.1	$604.8	$622.9	$641.6	$660.8	$681
Ongoing Backhaul Costs	$737.9	$760.1	$782.9	$806.3	$830.5	$855.5	$881.1	$908
Failure cost Take Out Pt (Labor)	$3.7	$3.8	$3.9	$4.0	$4.2	$4.3	$4.4	$5
Subtotal, Smart Meter Communication System	$1,295	$1,334	$1,374	$1,415	$1,458	$1,501	$1,546	$1,593

Smart Meter Costs ($1,000's)										15 Yr Sum - Total	15 Yr Sum - Capital	15 Yr Sum - O&M
III. Information Technology	Include?	Capex (c) or O&M (o)	Cost Factor	Units	Quantity	Apply Escalation	Escalation %	Phasing	+/- sens.			
Implementation												
Info Technology Labor (Loaded) - IT	yes	c	$1,162,243	Total	1	no	0.0%	35	0%	$1,162.2	$1,162.2	$0.0
Business Unit Labor (Loaded) - IT	yes	c	$439,731	Total	1	no	0.0%	36	0%	$439.7	$439.7	$0.0
Contractors	yes	c	$199,440	Total	1	no	0.0%	22	0%	$199.4	$199.4	$0.0
Data Sync	yes	c	$264,258	Total	1	no	0.0%	22	0%	$264.3	$264.3	$0.0
Up-front RNI Hardware Requirements	yes	c	$868,644	Total	1	no	0.0%	22	0%	$868.6	$868.6	$0.0
Up-front RNI Software Requirements	yes	c	$182,695	Total	1	no	0.0%	22	0%	$182.7	$182.7	$0.0
Supplier RNI Upgrade Cost	yes	c	$554,000	Total	1	no	0.0%	22	0%	$554.0	$554.0	$0.0
Ongoing												
Ongoing Info Technology Labor (Loaded) - IT	yes	o	$2,219,354	Total	1	no	0.0%	37	0%	$2,219.4	$0.0	$2,219.4
Periodic Hardware Refresh	yes	o	$15,052	per yr	1	yes	3.0%	23	0%	$111.5	$0.0	$111.5
Software License Maintenance	yes	o	$67,092	per yr	1	yes	3.0%	20	0%	$1,151.1	$0.0	$1,151.1
AMI Supplier Software License Maintenance	yes	o	$461,604	per yr	1	yes	3.0%	21	0%	$7,848.8	$0.0	$7,848.8
AMI Supplier Software License Maintenance - Growth	yes	o	$0.64	per unit/yr	29,340	yes	3.0%	6	0%	$200.1	$0.0	$200.1
Subtotal, Backoffice IT Applications and Operations										**$15,201.9**	**$3,671.0**	**$11,530.9**

Smart Meter Costs ($1,000's)	Implementation Period Total	2017	2018	2019	2020	2021	2022	2023
III. Information Technology								
Implementation								
Info Technology Labor (Loaded) - IT	$1,153.9	$629.4	$524.5	$0.0	$8.3	$0.0	$0.0	$0.0
Business Unit Labor (Loaded) - IT	$439.7	$198.8	$240.9	$0.0	$0.0	$0.0	$0.0	$0.0
Contractors	$199.4	$199.4	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Data Sync	$264.3	$264.3	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Up-front RNI Hardware Requirements	$868.6	$868.6	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Up-front RNI Software Requirements	$182.7	$182.7	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Supplier RNI Upgrade Cost	$554.0	$554.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Ongoing								
Ongoing Info Technology Labor (Loaded) - IT	$107.0	$0.0	$52.7	$54.3	$55.9	$57.6	$355.9	$61.1
Periodic Hardware Refresh	$0.0	$0.0	$0.0	$0.0	$16.4	$16.9	$17.4	$0.0
Software License Maintenance	$110.6	$0.0	$39.5	$71.2	$73.3	$75.5	$77.8	$80.1
AMI Supplier Software License Maintenance	$690.3	$19.4	$239.4	$431.5	$504.4	$519.5	$535.1	$551.2
AMI Supplier Software License Maintenance - Growth	$7.9	$1.3	$2.6	$4.0	$5.5	$7.1	$8.8	$10.5
Subtotal, Backoffice IT Applications and Operations	**$4,578.4**	**$2,917.9**	**$1,099.5**	**$561.0**	**$663.9**	**$676.7**	**$995.0**	**$702.9**

Smart Meter Costs ($1,000's)	2024	2025	2026	2027	2028	2029	2030	2031
III. Information Technology								
Implementation								
Info Technology Labor (Loaded) - IT	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Business Unit Labor (Loaded) - IT	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Contractors	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Data Sync	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Up-front RNI Hardware Requirements	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Up-front RNI Software Requirements	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Supplier RNI Upgrade Cost	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Ongoing								
Ongoing Info Technology Labor (Loaded) - IT	$62.9	$388.9	$66.8	$412.6	$425.0	$73.0	$75.1	$77.4
Periodic Hardware Refresh	$0.0	$0.0	$19.6	$20.2	$20.8	$0.0	$0.0	$0.0
Software License Maintenance	$82.5	$85.0	$87.5	$90.2	$92.9	$95.7	$98.5	$101.5
AMI Supplier Software License Maintenance	$567.7	$584.7	$602.3	$620.4	$639.0	$658.1	$677.9	$698.2
AMI Supplier Software License Maintenance - Growth	$12.4	$14.3	$16.4	$18.6	$20.9	$23.3	$25.9	$28.5
Subtotal, Backoffice IT Applications and Operations	**$725.5**	**$1,073.0**	**$792.7**	**$1,162.0**	**$1,198.6**	**$850.1**	**$877.4**	**$905.7**

Smart Meter Costs ($1,000's)										15 Yr Sum - Total	15 Yr Sum - Capital	15 Yr Sum - O&M
IV. Program Management & OCM	Include?	Capex (c) or O&M (o)	Cost Factor	Units	Quantity	Apply Escalation	Escalation %	Phasing	+/- sens.			
Implementation												
Info Technology Labor (Loaded) - OCM	yes	c	$257,272	Total	1	no	0.0%	32	0%	$257.3	$257.3	$0.0
Organization Change Management Lead Fees	yes	c	$1,472,675	Total	1	no	0.0%	17	0%	$1,472.7	$1,472.7	$0.0
Organization Change Management Lead Expenses	yes	c	$107,053	Total	1	no	0.0%	18	0%	$107.1	$107.1	$0.0
Printed Material	yes	c	$522,000	Total	1	no	0.0%	19	0%	$522.0	$522.0	$0.0
Upfront Plan Development Related Costs	yes	c	$503,750	Total	1	no	0.0%	22	0%	$503.8	$503.8	$0.0
Project Management Labor (Loaded) - PM	yes	c	$4,546,669	Total	1	no	0.0%	34	0%	$4,546.7	$4,546.7	$0.0
Project Management Expenses	yes	c	$234,000	Total	1	no	0.0%	24	0%	$234.0	$234.0	$0.0
Info Technology Labor (Loaded) - OCM	yes	o	$81,896	Total	1	no	0.0%	33	0%	$81.9	$0.0	$81.9
Subtotal, Program Management										**$7,725.3**	**$7,643.4**	**$81.9**
Overall Total										**$222,466.5**	**$183,505.6**	**$38,960.9**
Cumulative Total												

Smart Meter Costs ($1,000's)	Implementation Period Total	2017	2018	2019	2020	2021	2022	2023
IV. Program Management & OCM								
Implementation								
Info Technology Labor (Loaded) - OCM	$257.3	$85.9	$107.0	$64.3	$0.0	$0.0	$0.0	$0.0
Organization Change Management Lead Fees	$1,472.7	$496.8	$529.7	$446.2	$0.0	$0.0	$0.0	$0.0
Organization Change Management Lead Expenses	$107.1	$35.0	$37.3	$34.8	$0.0	$0.0	$0.0	$0.0
Printed Material	$522.0	$216.5	$204.4	$101.1	$0.0	$0.0	$0.0	$0.0
Upfront Plan Development Related Costs	$503.8	$503.8	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Project Management Labor (Loaded) - PM	$4,181.7	$1,328.0	$1,416.6	$1,437.1	$365.0	$0.0	$0.0	$0.0
Project Management Expenses	$216.0	$72.0	$72.0	$72.0	$18.0	$0.0	$0.0	$0.0
Info Technology Labor (Loaded) - OCM	$81.9	$28.4	$35.3	$18.2	$0.0	$0.0	$0.0	$0.0
Subtotal, Program Management	**$7,342.3**	**$2,766.3**	**$2,402.4**	**$2,173.7**	**$383.0**	**$0.0**	**$0.0**	**$0.0**
Overall Total	**$166,726.9**	**$39,104.2**	**$105,124.2**	**$22,498.5**	**$4,101.9**	**$3,975.3**	**$4,244.3**	**$4,205.3**
Cumulative Total		**$39,104.2**	**$144,228.4**	**$166,726.9**	**$170,828.8**	**$174,804.2**	**$179,048.5**	**$183,253.7**

Smart Meter Costs ($1,000's)	2024	2025	2026	2027	2028	2029	2030	2031
IV. Program Management & OCM								
Implementation								
Info Technology Labor (Loaded) - OCM	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Organization Change Management Lead Fees	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Organization Change Management Lead Expenses	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Printed Material	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Upfront Plan Development Related Costs	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Project Management Labor (Loaded) - PM	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Project Management Expenses	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Info Technology Labor (Loaded) - OCM	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Subtotal, Program Management	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Overall Total	$4,175.9	$4,792.1	$4,624.8	$4,937.4	$5,267.6	$4,858.9	$5,198.3	$5,357.7
Cumulative Total	$187,429.7	$192,221.8	$196,846.6	$201,784.0	$207,051.6	$211,910.5	$217,108.8	$222,466.5